We claim:

1. A method for supplementing non-allograft bone or bone tissue with a therapeutically useful compound, comprising the steps of:

(a) exposing non-allograft bone or bone tissue to a therapeutically useful compound; and

(b) applying a potential difference across said non-allograft bone or bone tissue such that the therapeutically useful compound is concentrated within the bone or bone tissue.

2. The method according to claim 1, wherein the therapeutically useful compound is concentrated within the non-allograft bone or bone tissue using an externally applied potential difference.

3. The method according to claim 2, wherein the therapeutically useful compound is introduced at medically safe levels into tissue surrounding a bone in a patient.

4. The method according to claim 2, wherein the externally applied potential difference does not affect the structural integrity of tissue surrounding the bone.

5. The method according to claim 1, wherein the therapeutically useful compound is selected from the group consisting of antibiotics, antifungal compounds, chemotherapeutic compounds, tissue growth factors, non-steroidal anti-inflammatory agents, such as indomethacin, neuromuscular agents affecting calcium and bone metabolism, anti-viral agents, anti-tuberculosis agents, anthelmintic agents, antiseptic agents, vitamins and minerals.

6. The method according to claim 1, wherein the therapeutically useful compound forms a salt in solution and ionises to a single positive or negative ion.

7. The method according to claim 5, wherein the therapeutically useful compound is an antibiotic selected from the group consisting of flucloxacillin, gentamycin, cephalothin, ticarcillin, ciprofloxacin, nenzl-penicillin, cefoperazone, cefuroxime, cephazolin and tobramycin.

8. The method according to claim 7, wherein the antibiotic is gentamycin, and wherein the gentamycin is loaded into the non-allograft bone or bone tissue at a maximum dose of about 200 mg/kg.

9. The method according to claim 7, wherein the antibiotic is

flucloxacillin, and wherein the flucloxacillin is loaded into the non-allograft bone or bone tissue at a maximum dose of about 80 mg/kg.

10. The method according to claim 5, wherein the therapeutically useful compound is an antifungal compound selected from the group consisting of miconazole and ketaconazole.

11. The method according to claim 5, wherein the therapeutically useful compound is a chemotherapeutic compound selected from the group consisting of 5-fluoro-uracil and vinblastine.

12. A non-allograft bone or bone tissue supplemented with at least a therapeutically useful compound, wherein said compound is concentrated within the bone or bone tissue by the method according to claim 1.

13. The non-allograft or bone tissue according to claim 12, wherein the therapeutically useful compound is concentrated to an amount between the minimum concentration required for activity of the compound *in vivo* and the maximum concentration that is equal to the safe maximum single dose for systemic administration.

14. The non-allograft bone or bone tissue according to claim 12, wherein the therapeutically useful compound is selected from the group consisting of antibiotics, antifungal compounds, chemotherapeutic compounds, tissue growth factors, non-steroidal anti-inflammatory agents, such as indomethacin, neuromuscular agents affecting calcium and bone metabolism, anti-viral agents, anti-tuberculosis agents, anthelmintic agents, antiseptic agents, vitamins and minerals.

15. The non-allograft bone or bone tissue according to claim 12, wherein the therapeutically useful compound forms a salt in solution and ionises to a single positive or negative ion.

16. The non-allograft bone or bone tissue according to claim 14, wherein the therapeutically useful compound is an antibiotic selected from the group consisting of flucloxacillin, gentamycin, cephalothin, ticarcillin, ciprofloxacin, nenzl-penicillin, cefoperazone, cefuroxime, cephazolin and tobramycin.

17. The non-allograft bone or bone tissue according to claim 16, wherein the antibiotic is gentamycin, and wherein the gentamycin is loaded into

the bone or bone tissue at a maximum dose of about 200 mg/kg.

18. The non-allograft bone or bone tissue according to claim 16, wherein the antibiotic is flucloxacillin, and wherein the flucloxacillin is loaded into the bone or bone tissue at a while the maximum dose of about 80 mg/kg.

19. The non-allograft bone or bone tissue according to claim 14, wherein the therapeutically useful compound is an antifungal compound selected from the group consisting of miconazole and ketaconazole.

20. The non-allograft bone or bone tissue according to claim 14, wherein the therapeutically useful compound is a chemotherapeutic compound selected from the group consisting of 5-fluorouracil and vinblastine.

21. A method for supplementing non-allograft bone or bone tissue with a therapeutically useful compound, comprising the steps of:

(a) exposing non-allograft bone or bone tissue *in vitro* or *ex vivo* to a therapeutically useful compound; and

(b) applying a potential difference across said non-allograft bone or bone tissue such that the therapeutically useful compound is concentrated within the bone or bone tissue.

22. A method for treating a patient in need of non-allograft bone or bone tissue supplemented with a therapeutically useful compound, which method comprises preparing bone or bone tissue supplemented with the therapeutically useful compound, comprising the steps of:

a) exposing non-allograft bone or bone tissue to a therapeutically useful compound; and

b) applying a potential difference across said non-allograft bone or bone tissue such that the therapeutically useful compound is concentrated within the non-allograft bone or bone tissue.

23. The method according to claim 21 or 22, wherein the therapeutically useful compound is concentrated within the non-allograft bone or bone tissue using an externally applied potential difference.

24. The method according to claim 21 or 22, wherein the therapeutically useful compound is introduced at medically safe levels into tissue surrounding a bone in a patient.

25. The method according to claim 22, wherein the externally applied

potential difference does not affect the structural integrity of tissue surrounding the bone.

26. The method according to claim 21 or 22, wherein the therapeutically useful compound is selected from the group consisting of antibiotics, antifungal compounds, chemotherapeutic compounds, tissue growth factors, non-steroidal anti-inflammatory agents, such as indomethacin, neuromuscular agents affecting calcium and bone metabolism, anti-viral agents, anti-tuberculosis agents, anthelmintic agents, antiseptic agents, vitamins and minerals.

27. The method according to claim 21 or 22, wherein the therapeutically useful compound forms a salt in solution and ionises to a single positive or negative ion.

28. The method according to claim 26, wherein the therapeutically useful compound is an antibiotic selected from the group consisting of flucloxacillin, gentamycin, cephalothin, ticarcillin, ciprofloxacin, nenzl-penicillin, cefoperazone, cefuroxime, cephazolin and tobramycin.

29. The method according to claim 28, wherein the antibiotic is gentamycin, and wherein the gentamycin is loaded into the non-allograft bone or bone tissue at a maximum dose of about 200 mg/kg.

30. The method according to claim 28, wherein the antibiotic is flucloxacillin, and wherein the flucloxacillin is loaded into the non-allograft bone or bone tissue at a maximum dose of about 80 mg/kg.

31. The method according to claim 26, wherein the therapeutically useful compound is an antifungal compound selected from the group consisting of miconazole and ketaconazole.

32. The method according to claim 26, wherein the therapeutically useful compound is a chemotherapeutic compound selected from the group consisting of 5-fluoro-uracil and vinblastine.

33. A non-allograft bone or bone tissue supplemented with at least a therapeutically useful compound, wherein said compound is concentrated within the non-allograft bone or bone tissue according to the method defined by claim 21.

34. The non-allograft or bone tissue according to claim 33, wherein the

therapeutically useful compound is concentrated to an amount between the minimum concentration required for activity of the compound *in vivo* and the maximum concentration that is equal to the safe maximum single dose for systemic administration.

35. The non-allograft bone or bone tissue according to claim 33, wherein the therapeutically useful compound is selected from the group consisting of antibiotics, antifungal compounds, chemotherapeutic compounds, tissue growth factors, non-steroidal anti-inflammatory agents, such as indomethacin, neuromuscular agents affecting calcium and bone metabolism, anti-viral agents, anti-tuberculosis agents, anthelmintic agents, antiseptic agents, vitamins and minerals.

36. The non-allograft bone or bone tissue according to claim 33, wherein the therapeutically useful compound forms a salt in solution and ionises to a single positive or negative ion.

37. The non-allograft bone or bone tissue according to claim 35, wherein the therapeutically useful compound is an antibiotic selected from the group consisting of flucloxacillin, gentamycin, cephalothin, ticarcillin, ciprofloxacin, nenzl-penicillin, cefoperazone, cefuroxime, cephazolin and tobramycin.

38. The non-allograft bone or bone tissue according to claim 37, wherein the antibiotic is gentamycin, and wherein the gentamycin is loaded into the bone or bone tissue at a maximum dose of about 200 mg/kg.

39. The non-allograft bone or bone tissue according to claim 37, wherein the antibiotic is flucloxacillin, and wherein the flucloxacillin is loaded into the bone or bone tissue at a while the maximum dose of about 80 mg/kg.

40. The non-allograft bone or bone tissue according to claim 35, wherein the therapeutically useful compound is an antifungal compound selected from the group consisting of miconazole and ketaconazole.

41. The non-allograft bone or bone tissue according to claim 35, wherein the therapeutically useful compound is a chemotherapeutic compound selected from the group consisting of 5-fluorouracil and vinblastine.